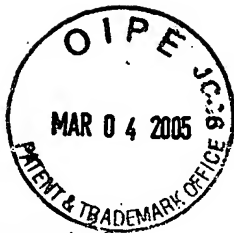


The Claims



1. (Canceled)
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14. (Canceled)
15. (Canceled)
16. (Canceled)
17. (Canceled)

18. (New) Flow through aqueous liquid purification apparatus for sterilizing water to a target SAL comprising:

a flow through reservoir comprising an input pathway, an output pathway and an internal heating chamber pathway, disposed between the input pathway and output pathway, said internal heating chamber pathway comprising an enclosed, elongated flow path along which water is displaced and disposed for being heated to a sterilizing temperature;

each of said input, output and heating chamber pathways comprising sidewalls capable of withstanding increased internal pressure generated by water being heated to the sterilizing temperature while being kept in a liquid state;

a heating chamber comprising media which surrounds and is in thermal contact with the internal heating chamber pathway along the enclosed elongated path, said media being heated to a predetermined temperature consistent with heating water within the heating chamber pathway to the sterilizing temperature;

a flow resisting element, disposed in the output pathway, which restricts effluent flow such that a predetermined minimum upstream pressure is maintained within the internal heating chamber pathway;

a valve subsystem comprising a temperature sensor switch which is disposed to be activated to an ON state when water in the heating chamber pathway is at a first predetermined temperature which is at least as high as the sterilizing temperature; the temperature sensor further being activated to an OFF state at a second predetermined temperature which is less than the first predetermined temperature;

said valve subsystem further comprising another valve disposed in the output pathway which is opened to permit effluent flow when the temperature sensor switch is ON and closed to restrict effluent flow when the temperature sensor switch is OFF to thereby assure that temperature in the heating chamber pathway is maintained to a sterilizing level; and

a liquid pressure and flow source providing subsystem having capacity to supply a predetermined volume of liquid which flows through the reservoir against a back pressure which

is, at least in part, the consequence of the predetermined minimum upstream pressure provided by the pressure relief valve.

19. (New) The flow through aqueous liquid purification apparatus according to Claim 18 further comprising a heat exchanger for exchanging heat between cooler water flowing into the input pathway and warmer water flowing through the output pathway.

20. (New) The flow through aqueous liquid purification apparatus according to Claim 18 wherein the flow resisting element is a pressure relief valve.

21. (New) The flow through aqueous liquid purification apparatus according to Claim 20 wherein said pressure relief valve comprises an interconnection to an effluent end of said heat exchanger to thereby assure that water flowing from the relief valve is reduced in temperature to reduce likelihood of a steam effluent.

22. (New) The flow through aqueous liquid purification apparatus according to Claim 18 wherein said valve subsystem further comprises a pressure sensor switch which is disposed to be ON when pressure within the heating chamber pathway is at least a first predetermined pressure and OFF when the pressure within the heating chamber pathway is a second predetermined pressure which is less than the first predetermined pressure.

23. (New) The flow through aqueous liquid purification apparatus according to Claim 22 wherein said valve subsystem further comprises an AND gate which operates to open the other valve when the temperature sensor switch and pressure sensor switch are both ON and to close the other valve when either the pressure sensor switch or the temperature sensor switch is OFF to thereby provide safety for heating and pressure failure conditions.

24. (New) The flow through aqueous liquid purification apparatus according to Claim 18 wherein said media comprises material which changes from a solid to liquid state at the predetermined temperature.

25. (New) The flow through aqueous liquid purification apparatus according to Claim 24 wherein said media comprises paraffin.

26. (New) The flow through aqueous liquid purification apparatus according to Claim 18 wherein said liquid pressure and flow source comprises a single pump.

27. (New) The flow through aqueous liquid purification apparatus according to Claim 18 wherein said liquid pressure and flow source comprises a static reservoir with a flow control orifice.

28. (New) A method for sterilizing water to a target SAL comprising the steps of:

(a) providing a flow through aqueous liquid purification apparatus comprising:

(i) a flow through reservoir comprising an input pathway, an output pathway and an internal heating chamber pathway, disposed between the input pathway and output pathway, said internal heating chamber pathway comprising an enclosed, elongated flow path along which water is displaced and disposed for being heated to a sterilizing temperature;

(ii) each of said input, output and heating chamber pathways comprising sidewalls capable of withstanding increased internal pressure generated by water being heated to the sterilizing temperature while being kept in a liquid state;

(iii) a heating chamber comprising media which surrounds and is in thermal contact with the internal heating chamber pathway along the enclosed elongated path,

said media being heated to a predetermined temperature consistent with heating water within the heating chamber pathway to the sterilizing temperature;

(iv) a flow resisting element, disposed in the output pathway, which restricts effluent flow such that a predetermined minimum upstream pressure is maintained within the internal heating chamber pathway;

(v) a valve subsystem comprising a temperature sensor switch which is disposed to be activated to an ON state when water in the heating chamber pathway is at a first predetermined temperature which is at least as high as the sterilizing temperature; the temperature sensor further being activated to an OFF state at a second predetermined temperature which is less than the first predetermined temperature;

(vi) said valve subsystem further comprising an electrically controlled valve disposed in the output pathway which is opened to permit effluent flow when the temperature sensor switch is ON and closed to restrict effluent flow when the temperature sensor switch is OFF to thereby assure that temperature in the heating chamber pathway is maintained to a sterilizing level; and

(vii) a liquid pressure and flow source providing subsystem having capacity to supply a predetermined volume of liquid which flows through the reservoir against a back pressure which is, at least in part, the consequence of the predetermined minimum upstream pressure provided by the flow resisting element;

(b) delivering water into the apparatus at a rate which is consistent with a desired SAL value for effluent from the apparatus, water being delivered via said source into the input, heating chamber and output pathways;

(c) applying heat to the heating chamber pathway via the heating chamber;

(d) permitting effluent flow via the flow resisting element when the minimum upstream pressure is reached by water in the heating chamber pathway;

(e) opening the electrically controlled valve when the temperature sensor switch is activated to an ON state to thereby deliver effluent sterilized water when the flow resisting element is also open to permit effluent flow.